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ABSTRACT

Scholars theorize that social contacts affect the productivity of individuals and groups. Robert Putnam claims to have found support for this theory in his studies of Italy and the United States. In each case he concludes that the presence of social capital generalized norms of trust and reciprocity is sufficient to predict progress on a variety of social indicators. Using demographic and public opinion data collected at the state level in the United States, Putnam links the performance of schools to his measure of social capital. Schools perform best where social capital is found in greater abundance. This paper attempts to replicate Putnam's findings using data from local communities in North Carolina. Since social contacts and social capital occur at the local level between individuals and groups in a community, a logical extension of Putnam's work is to verify that these relationships exist locally. Using data from the 100 counties of North Carolina, the following hypotheses were proposed and tested: students score higher on statewide tests in school districts where social contact is greater among residents; and (2) students drop out of school at lower rates in school districts where social contact is greater among residents. If local evidence exists to support the claim that social contacts matter, then what programs governments fund in the name of social progress may need to be reconsidered. (Contains 19 references and 3 tables.) (Author/BT)

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# Social Capital and School Performance: A Local-Level Test

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for
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*Abstract: Scholars theorize that social contacts affect the productivity of individuals and groups. Robert Putnam claims to have found support for this theory in his studies of Italy and the United States. In each case he concludes that the presence of social capital - generalized norms of trust and reciprocity - is sufficient to predict progress on a variety of social indicators. Using demographic and public opinion data collected at the state level in the U.S, Putnam links the performance of schools to his measure of social capital. Schools perform best where social capital is found in greater abundance. This paper attempts to replicate Putnam's finding using data from local communities in North Carolina. Since social contacts and social capital occur at the local level between individuals and groups in a community, a logical extension of Putnam's work is to verify that these relationships exist locally. I propose and test the following two hypotheses using data from the 100 counties of North Carolina: 1) Students score higher on statewide tests in school districts where social contact is greater among residents; 2) Students drop out of school at lower rates in school districts where social contact is greater among residents. If local evidence exists to support the claim that social contacts matter, then what programs governments fund in the name of social progress may need to be reconsidered.*

The idea that social progress depends upon the interactions of individuals within a community, state or nation seems intuitive. If not collectively, how else might we accomplish social aims? Attempts to raise leaders to the status of heroes have not convinced those interested in social progress that networks do not matter or that individuals can accomplish great public feats while acting entirely alone. At issue, then, is not so much *that* social contacts matter but *how* they matter. Scholars offer varying accounts of how social contacts and interaction matter (Almond and Verba, 1963; Coleman, 1988; Putnam, 1993; Schneider, et. al., 1997; and Putnam, 2000). These and other pieces offer explanations for social progress, conceptualizations of social contact, and ideas about how the two relate.

This paper joins several others in examining social contacts at the local level. In particular, it focuses on a single conception of contact - social capital. Scholars argue that social capital is kin to other forms of capital found in society, such as financial and human capital (Coleman, 1988 and 1990; Putnam, 1993, 1995 and 2000). They argue that social capital can be grown or depleted, and that the volume of social capital in a community matters. This paper, unlike others, does not offer an alternative conception of social capital or attempt to introduce new ways to measure social capital. Instead, it tests Robert Putnam's finding that public schools perform better where high levels of social capital are found, but it does so with community-level data. Social capital, if it does exist, is an outgrowth of individuals and groups interacting. This occurs at the local, not the state, level. Putnam's conclusions have drawn admirers and critics alike, but to determine whether social contact makes a difference in American's communities requires a community-level examination. This paper attempts to fill that void. Additionally, scholars interested in what drives educational performance should find interesting Putnam's claim that social interaction - not wealth or race - drives school performance. America spends billions of dollars annually on public education, and uncovering any relationships pertaining to school performance should be of interest to policy makers.

I am reluctant to begin this piece with a list of concessions, but as is often the case, time and money prevent full duplication of Putnam's social capital index. Data more readily available at the

state level through organizations and well-funded research centers are not found at the community level in North Carolina. The forthcoming tests, while keeping the spirit of Putnam's research, cannot be said to be testing the exact same thing. I offer the closest approximation immediately available.

## Social Contacts as Culture and Capital

The concepts of culture and social capital draw on the attitudes, values and behaviors of individual citizens in explaining how social contacts matter. Researchers use these concepts to explain how it is that social contacts within society can influence the stability among democratic governments (Almond and Verba, 1963), the success of regional governments (Putnam, 1993), the homicide rates in cities (Schneider, et. al., 1997), the level of civic engagement in a nation (Putnam, 2000) and the quality of state government (Knack, 2002). To these and other researchers, social contacts matter in tangible ways.

Writing in the early 1960s, Almond and Verba conceptualize civic culture as "the ways in which political elites make decisions, their norms and attitudes, as well as the norms and attitudes of the ordinary citizens, his relation to government and to his fellow citizens." Their path-breaking study of five countries explains how social contacts - through attitudes, values and behaviors - influence a nation's culture, which makes it more or less open to change. Of interest to them is the diffusion of democratic ideals. Accordingly, how well democratic ideals diffuse within a nation's political culture will determine how stable the nation's democratic government will be.

Some democratic nations are more stable simply because efforts to diffuse democratic ideals among the citizenry have been more successful. With a change in attitudes, values and behaviors comes a change in action. Like social capital researchers to follow, Almond and Verba recognize the significance of social contacts in explaining why some things unfold as they do. Twenty-five years after their study, the concept of social capital emerged in academic circles as a means of explaining why some communities are more successful in making social progress. There are similarities in what underlies the concepts of culture and social capital.

Whereas culture is believed to exist in nations and communities and is considered susceptible to external forces of change, social capital is viewed as a resource or tool that can be used to create change. Coleman (1988) conceptualizes social capital as a resource that is "created when the relations among persons change in ways that facilitate action." One might argue here that social capital is a tool that can be used to change a nation or community's culture. Social contacts matter, but in this conception they matter for different reasons. Social contacts are believed to create a new form of capital, much like financial or human capital.

Building upon the work of Coleman, Putnam conceptualizes social capital as "features of social organizations, such as networks, norms, and trust that facilitate action and cooperation for mutual benefit" (1993) and as "connections among individuals - social networks and the norms of reciprocity and trustworthiness that arise form them." (2000). Putnam extends Coleman's conception, adding references to

networks, norms of reciprocity and trust. These become the blocks upon which he builds his analyses of regional governments in Italy and American communities in general. This conception is most pertinent to the study that follows. Before getting into the models of social capital to be tested at the local level, there is value in a brief examination of how social capital, conceived mostly in the spirit of Coleman, is approached by other researchers.

## Perspectives on Social Capital Research

Researchers in the U.S. and abroad are exploring social capital's relationship to issues such as violence, government quality, the development of democratic institutions and education. Fukuyama (2002) claims the most significant problem conceptually in the study of social capital is the lack of an agreed upon definition, which prevents the development of solid measures. Although there is considerable variation in how social capital is operationalized, the concept is framed by many researchers in the language of Coleman and Putnam. What follows is a summary of how some researchers are examining social capital.

Rosenfeld, Messner and Baumer (2001) examine the relationship between social capital and homicide. The authors define social capital as "cooperative social relationships that facilitate the realization of collective goals" and develop a measure that includes voting, organizational membership and public opinion data. Their definition is conceived in the spirit of Coleman and Putnam, and their measures are similar to those found in Putnam's social capital index. Using a

nationally representative sample of geographic areas, Rosenfeld, Messner and Baumer find that areas with depleted levels of social capital have higher homicide rates. A subsequent study of homicide by Galea, Karpati and Kennedy (2002) draws directly on the social capital conception of Coleman and Putnam. Acknowledging that previous research has demonstrated that low levels of social capital can lead to increases in violence, they test for a converse relationship. Does violence affect levels of social capital? They find that the relationship is bidirectional, arguing that while social capital influences violence, violence also influences social capital. The authors conclude that more complex modeling is required to get at the non-linear and dynamic relationship that exists between social capital and violence.

Turning from concerns about violence to concerns about the performance of state governments, Knack (2002) questions whether social trust, volunteering, census response and civic engagement - aspects of social capital conceptually linked to generalized reciprocity - can be shown to influence government performance. He has two interests. The first is in the relationship just described. The second follows that of Paxton (1999), Stolle and Rochon (1998) and Knack and Keefer (1997) in wanting to disaggregate the concept of social capital. Some researches, such as Putnam, construct indices of social capital, which leads Knack to question whether each component of these indices is an equally strong predictor of the phenomenon being explained. He finds that aspects of social capital conceptually identified with generalized reciprocity, such as social trust,

volunteering and census response, are associated with better governmental performance. Conversely, aspects of social capital identified with social connectedness, such as activity in associations and informal socializing, are unrelated to governmental performance. As a result of these findings, Knack calls into question the use of aggregate indices of social capital and cautions against the wholesale acceptance of mixing measures of generalized reciprocity and social connectedness.

Some researchers, such as Krishna (2002), examine social capital outside of the U.S. He draws on the conception of Coleman and Putnam but places the concept in a foreign context, where cultural differences may pose problems to traditional social capital research. Krishna is interested in social capital as a tool that can be used to develop democratic institutions in rural India. He questions whether social capital can stimulate economic development, promote ethnic peace and strengthen democratic governance. Since rural India lacks the network of formal associations found the U.S., using a measure similar to Putnam's social capital index might underestimate the true level of association among citizens. Instead, he relies on assessments of more informal means of association. He finds that social capital alone is not sufficient for the development of democratic institutions. Communities that have developed the most thus far have had social capital and some activating agent. The agent in rural India, Krishna finds, takes the form of a young, educated leader who is oriented toward successful development. Older leaders, despite the operating in an environment rich in social capital, are less likely

than young leaders to stimulate economic development, promote ethnic peace and strengthen democratic governance.

The studies considered thus far have stemmed from conceptions of social capital introduced by Coleman and Putnam. Some researchers, such as Stone et al. (2001), have found the concept of social capital inadequate for explaining institutional progress. They discard social capital as defined by Coleman and Putnam in favor a conceptualization of civic capacity. The key distinction between the two concepts lies in the parties involved, individuals versus institutions. Where social capital measures behavior that is mostly interpersonal and private, civic capacity is said to measure activities that are clearly in the public arena and that involve governing institutions and major group representatives. Stone and his colleagues argue that school performance is more a function of institutional interaction than private, interpersonal interaction, and that infusing politics back into public schools can lead to positive outcomes. They conclude that any significant reform among schools will require the development of local civic capacity, which means that institutions will have to cooperate and develop a shared vision within a given community. Social capital alone is not sufficient.

Stone and his colleagues join numerous researchers who are interested in the school performance or student performance. These researchers, including Putnam, question to what degree social capital or its components can change the school environment in ways that lead to different outcomes for students. Stanton-Salazar and Dornbusch (1995) argue that social interaction generates particularized benefits

for those in networks. They examine relationships between high school students of Mexican-origin and school staff members, arguing that supportive ties with institutional agents, such as teachers and guidance counselors, are necessary for student to advance in school and find jobs after graduation. Lee and Brinton (1996) examine student access to the meritocratic university system of South Korea and placement into the workforce. They divide social capital into institutional and private forms, where institutional social capital is said to reflect the help one gets from the placement office, professors, or friends and alumni, and private social capital is said to reflect family connections. They find that those with higher levels of formal and informal social capital are not necessarily accepted at more prestigious universities or hired at more prestigious firms. Merit appears to influence both entrance to the university and placement into the labor market. And, Schneider et al. (1997) explore how institutional arrangements affect levels of social capital. They argue that giving parents the option to choose a public school will lead them to participate in activities that can generate social capital within a community. They test their claim using measures of social capital previously used by Putnam and Fukuyama.

The eight pieces just considered demonstrate both variations and similarities in the research on social capital. Coleman's and Putnam's works are clearly an influence, even though they exert pressure more strongly on some researchers than on others. Similarities in conceptualizations, models and variable operationalizations are to be found, and each brings the discipline that much closer to an agreed

upon definition. This paper offers no new conceptualizations and no new measures of social capital. Instead, it tries to bring the dominant work in social capital down to the local level, the level at which it is believed to exist as a phenomenon.

## Putnam and Education

One could argue that Putnam (1993, 1995, 2000 and 2002) provides some the most influential works on social capital. His studies of Italian regional governments and American communities are widely cited in social capital research. In *Bowling Alone*, Putnam examines American communities and argues that, for the time being, citizens have turned away from decades of community interaction. He builds on his earlier works and describes how the nation's growing disconnectedness manifests itself in schools, neighborhoods, the economy, democracy and personal health. His focus on education is particularly relevant to this study.

Putnam argues that Americans are not as well off as we once were. Each decade since the 1960s has shown greater signs of disconnectedness, even though the beginnings of our disengagement date back to the 1940s. Generational change and the advent of television are the primary culprits, according to Putnam. Coinciding with the growth in disconnectedness are concerns about American public education. With the launching of Sputnik in 1957, often cited as a weak moment in American history, Americans began to question how well its public schools were preparing children. Twenty-six years later, a government-appointed panel labeled America a "nation at risk" of

failing with its public education system. Concerns about the quality of the public schools have escalated since then.

In *Bowling Alone*, Putnam finds that schools perform better in states with high levels of social capital (see Figure 82, pg. 300). Such a finding is significant given that for years scholars have pointed to other explanations, such as wealth and race, for student and school performance. Putnam controls for these variables in his model and still finds social capital as a significant predictor of performance. He uses an educational performance index as his dependent variable (explained on page 433) that includes measures of student achievement and dropout rates. He uses a social capital index as his independent variable (explained on page 435) that incorporates the following 14 measures: 1) Served on a committee for a local organization last year; 2) Most people can be trusted? vs. Can't be too careful? 3) Agree - "Most people are honest?" 4) Voting turnout in local elections; 5) Served as officer of local organization last year; 6) 501c(3) charitable organization per 1,000 population; 7) Attended club meetings: frequency last year; 8) Civic and social organizations per 100,000 population; 9) Attended public meeting on town or school affairs; 10) Organization memberships per capita; 11) "I spend a lot of time visiting friends"; 12) Entertained at home: frequency last year; 13) Did volunteer work: frequency last year; 14) Worked on community project: frequency last year.

In attempting to replicate Putnam's work at the local level, information on many of these variables proved difficult to locate. Although much public opinion work has been done in North Carolina,

little came close to approximating what Putnam had found for the 50 states. What little I found was too old to be considered practical to use. The section to follow details the structure of the study and the limitations within which I found myself working.

## Hypotheses, Data and Models

If social contacts affect the productivity of individuals and groups, then evidence should exist at the local level, where these contacts are taking place. Social capital, after all, is a local-level phenomenon. The challenge of producing evidence lies in finding accurate measures of contact or interaction. Putnam accomplishes this using multiple sources of state-level data, which are more plentiful and more readily available than data uniformly describing all school districts and counties in North Carolina.

There are some distinct advantages to using North Carolina as a sample for this study. The state has rural and urban areas, as well as regional variations that include coastal, agricultural and mountain communities. There are 100 school districts, known within the state as local education agencies, which provide a sufficient number of cases for OLS. The school district boundaries align with county boundaries, making data collection efficient and without need of imputation. Additionally, the state has made sufficient progress in increasing student achievement, making it a state to watch for those interested in education reform efforts. And, finally, focusing on a single state allows for the use of test results that have been collected from the same test, using the same procedures, and the use of dropout data

rates that have been collected using a single system. In each case, I would expect the data to more accurately reflect the populations than if they had been collected from different states, where different tests and different guidelines have been used.

Despite the advantages, there are some disadvantages in focusing on only one state. Given that North Carolina is only one of 50 states in the nation, generalizing beyond the state will be difficult. One state is not even enough of a sample to generalize across the Southeast, which is unfortunate. I maintain, however, that the exercise is worth attention because of what it can tell us about social contacts and social capital at the local level.

In the paragraphs to follow, I introduce two hypotheses and five models that guide my efforts to test social contacts theory and Putnam's findings in *Bowling Alone*. I also provide an explanation of the data.

*Hypotheses*

Although Putnam makes numerous claims about social capital's influence of social progress, this paper examines the influence of social capital on school performance only. The following two hypotheses are offered:

1) Hypothesis One: Students will score higher on statewide tests in school districts where social capital is greater among residents.

2) Hypothesis Two: Students will drop out of school at lower rates in school districts where social capital is greater among residents.

*Models*

Five models are used to test hypotheses one and two. Four address hypothesis one and one addresses hypothesis two. Only the dependent variable changes in each model. It is believed that the same independent variables will be influential across all models. The first model used to test hypothesis one is delineated as follows:

Reading Scores in Grade 4 = Number of Associations + % Population Voting + Median Family Income + Proportion of White Population + Population Density + Proportion of Population Migrating to Area + Per Pupil Spending.

The remaining models use Reading Scores in Grade 8, Math Scores in Grade 4, Math Scores in Grade 8, and Rate of Students Dropping Out as dependent variables. In each case, the measures are continuous.

*Data*

Putnam found sufficient data to construct indices of social capital and educational performance. Limitations of time, resources and sources of uniform local-level data require a simpler approach for this study. In the case of student test scores, the measures I offer are actually better measures than Putnam's. What follows is an explanation of the data.

Putnam's dependent variable, an index of educational performance, contains measures of student performance on the National Assessment of Education Progress test, student performance on the Scholastic Aptitude Test, and six measures of student dropout rates. NAEP is a standardized test administered nationally to a sample of students in each state. Although NAEP scores are a suitable measure, the test is not administered to enough students in each state to draw any significant conclusions below the state level. Additionally, individual school scores are not released publicly. SAT scores are problematic in that all students do not take the test and those that do have elected to participate. Self-selection and variation in the percentage of students participating by district make the SAT a less desirable measure.

As a substitute for NAEP and SAT scores, I introduce the 1999-2000 Math and Reading End-of-Grade Multiple Choice Tests. These tests are administered by the North Carolina Department of Public Instruction as part of the state's accountability program. In keeping with NAEP, I use the fourth-grade and eight-grade scores. The most significant difference between these measures and those used by Putnam are the elimination of any scores at the high school level and the reliance upon a single test. The scores may prove to be a better measure than Putnam's because of the higher percentage of students participating in each school district. Nearly all students in the state will take these exams, as compared to only a small sample of students with NAEP and less than three-fourths of students with SAT.

Additionally, the test is required, which eliminates the self-selection problem altogether.

The final dependent variable measures student dropouts. Although Putnam used a collection of six measures, I use only the numbers gathered by the Department of Public Instruction for students in grades seven through twelve. If there is a problem in the system used to collect the data, I assume that it would affect school districts equally and randomly.

Turning attention toward the independent variables, I begin with two of the fourteen measures identified in Putnam's index of social capital that could be replicated at the local level - number of associations and voting turnout. To ensure reliability of the measure of associations, I compiled data from three sources: *The Encyclopedia of Associations* (1997), the North Carolina Center for Non-Profits (2002), and the North Carolina Secretary of State's Office (2003). Although the lists of organizations vary somewhat in age, and count, the three measures correlate at .96. In the models specified to test the hypotheses, I use the measure of associations that appears in *The Encyclopedia of Associations* (1997), which I believe would be most easily accessible to anyone interested in following up this study.

Compiling data for voting turnout did not provide near the challenge as the measure of associations. I use the percent of the voting age population voting in the 2000 general election, computed using the number of votes for president as the numerator and the estimated voting age population as the denominator. This data comes from the U.S. Census Bureau.

The models include five control variables that all appear to be consistent with Putnam's study, although the exact controls used for each of his tests are not readily apparent from his publications. I incorporate the following: median family income, consisting of total money income received in the calendar year by all family members 15 years old and over; proportion of the population that is white, to get at issues highlighted in the educational literature on the achievement gap; population density, measured in the number of persons per square mile; proportion of the population migrating to the area recently, measured as the proportion of persons aged five years old or older who lived outside the county of reference five years earlier than census time; and per pupil expenditures, measured in terms of local, state and federal spending per pupil.

Results

Levels of association matter, according to this series of tests using local-level data. Support is found for both hypotheses, which further support Putnam's claims. In each model the association variable is statistically significant, although at varying levels. The influence of the percent of the population voting, however, does not reach statistical significance in any of the models. In the paragraphs to follow, I review each model to establish what we can learn from this series of tests.

Table 1 (see Appendix) summarizes the models assessing influence on performance in fourth- and eighth-grade reading. I find that where there are higher numbers of associations, students perform better on

statewide tests assessing reading competency. The odds of this relationship appearing by accident are one in 100. Control variables for race and migrating populations also turn up positive coefficients that are significant in both models. Per pupil expenditure produces a negative and significant coefficient in the fourth-grade model but only approaches significance (.14) in the eighth-grade model. Generalizing from these results, one would expect to find the highest performance on reading tests in communities where there are more associations, where a higher percentage of white residents live, where larger numbers of residents have moved in within the last five years and where less money is spent per child on education.

I anticipated a negative relationship between migration and testing performance, expecting that more established communities would provide a stable environment that would foster social contact. An alternative explanation for this finding is that new citizens moving to a community introduce a dynamic that is productive to older, more established societies. Alternatively, this southern state could be attracting new residents through economic development who are more highly educated. We know from research on industrialization and technology that many employers are moving to Sunbelt states, bringing with them or attracting higher paying jobs and more highly educated individuals and families.

Finding a negative relationship between spending and performance introduces an idea that runs contrary to popular belief about educational performance. Schools and education advocates frequently claim that states are not spending enough on education. These claims

have driven up per pupil spending in the past few decades. These results suggest that spending, in light of social capital, race and migration, may not drive performance. Factors other than spending matter.

Table 2 (see Appendix) shows the coefficients for fourth- and eighth-grade math. As in the case of reading, the association and race variables turn up positive and statistically significant. The migration variable is only significant in the fourth-grade model, but it is significant at .001, which suggests that it is not random. The coefficient for eighth-grade is not significant at any generally accepted level (.24), and as a result we cannot place much confidence in the existing relationship. The coefficient, however, remains positive.

In these models, the relationship between per pupil spending and social capital drops out entirely, although the coefficients do remain negative, suggesting there may be something to the idea that spending is less important than is often perceived. The difference in the results for the reading and math models suggests that there may be some nuances about learning how to read that may be somewhat different from learning math skills. Further research is needed to verify any claims of this sort. For the purpose of this paper, however, the significance of the association variable adds support to the claim that social capital matters.

Finally, Table 3 (see Appendix) provides insight into the relationship between dropouts and social capital. Does social capital influence the likelihood of students staying in school? The model

produces a coefficient in the predicted direction that is statistically significant. The chances of finding this relationship in error are 1 in 100. A second variable, per pupil spending, also reaches acceptable levels of significance. This time the coefficient for spending is positive. From this we can infer that students will drop out of schools less frequently in communities where more associations exist and where more money is spent on education. This provides the image of a community where residents are more actively involved with one another and where spending money on education is a high priority. Such a community, one can argue, would be less inclined to allow students to fall through the cracks.

One variable that by Putnam's account should have been significant is the voting percentage variable. He includes this measure in his index of social capital expecting states that are more active in the democratic process to be more likely to accumulate social capital. The coefficient turns up negative in some models and positive in others, but not statistically significant in all. This suggests it has an inconsistent and remote effect on school performance.

By many indications, the student achievement models appear to be well specified. The independent variables of association, percent of population voting, median family income, proportion of white population, population density, proportion of the population migrating to the area recently, and per pupil spending pick up on the dominant issues believed to influence educational performance, as well as the issues believed to be important to Putnam's argument. The R-squared

measures for the four models range from .64 to .73, suggesting that between 64 percent and 73 percent of the variation in students performance on standardized testing has been explained by the variables in the model.

The model incorporating dropout rates as the dependent variable failed to perform as well. In this case, only 22 percent of the variance in dropout rates is explained by the variables, suggesting that the factors influencing student performance on standardized tests are different from those influencing a student's decision to stay in school. More conceptual work in this area is needed.

Since all five models are specified with the same independent variables, a single test for multicollinearity produces the results necessary for analysis. Some sign of multicollinearity appears in the variance inflation factor test, but overall the measure (2.12) is reasonable. The association variable produces a tolerance factor measure of .70, which indicates that 70 percent of the measure is not being picked up by any other variable in the model. Six of the variables range between .44 and .70. The measure of median family income, however, produces a score of .26, indicating that 74 percent of the measure is being picked up by other variables in the model. This is a concern, but I left the variable in the model because of its importance to claims that wealth drives educational performance. Producing a model explaining educational performance without controlling for wealth would leave it open to significant criticism, unless I could explain how and where it is already being controlled for, which I do not believe I can do at this time.

I considered alternative, more parsimonious models, but none conceptually captured the issue as well as the models presented. The more parsimonious models seemed to leave too many important issues unaccounted for. Despite the significance of the findings, however, I do believe there are opportunities for more research in this area.

## Further Research and Conclusion

Constrained by time and resources, this paper provides a pared-down test of Putnam's social capital measure. Importantly, it brings his ideas and conceptions to the local level, where social capital is either built or neglected. Advocates of social capital and social contacts theory will find in this study support for their argument - how citizens interact with one another influences social progress.

Alternative means of expanding this research include building upon the local-level measures found in Putnam's indices. For example, no measure of volunteerism at the local level has been uncovered. There may be reasonable proxies out there that could be worked into a model and tested. Additionally, with adequate funding, an attempt to replicate the public opinion surveys would allow measurements to be produced on issues of trust. A third extension of this research would be to include additional states. The primary problem to resolve in adding states is the lack of a coherent measure of student performance across states. Since most states develop their own standardized tests, one would need to find some means of overcoming this barrier. Tests such as the Metropolitan Achievement Test or the Stanford Tests are administered in multiple states but not always to all students. Any

sample of states would be dependent upon the researcher's decision about what test to use in assessing student achievement.

At least one practical reason exists for pursuing further studies regarding the link between social capital and school performance. Tight financial times are upon the states, and global competition is forcing states and communities to compete for jobs that are easily moved overseas. Additional information about what factors may be related to school performance could help states allocate resources in ways more productive toward community growth, stability and vitality.

Associations and social contacts matter in terms of social progress. Changes under way in American society may be pulling us apart, as Putnam claims, but this may have more dramatic affects than just not knowing ones neighbors. The high standard of living in this country that many have come to appreciate may be in jeopardy as other nations reach education levels where they begin to offer equally qualified and more affordable labor than can be found in America. At least from this local level study, there is reason to believe that citizen interaction and social capital may be what is required for students to succeed in school and in the global marketplace of jobs. Preserving or increasing the standard of living found in this country may require us to get involved outside of our homes in more traditional ways.

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Appendix

**Table 1**
**Reading Scores**

| | 4th | 8th |
|---|---|---|
| Association | .0326*** | .0383**** |
| | *(.0123)* | *(.0103)* |
| % of Voting Age Population Voting in General Election | .0273 | 0.0231 |
| | *(.0308)* | (.0258) |
| Median Family Income | .00001 | .000006 |
| | *(.00003)* | (.00003) |
| White Population | 7.791**** | 7.383**** |
| | *(.8835)* | (.7404) |
| Population Density | .00009 | -.00004 |
| | *(.0009)* | (.0007) |
| Migration | 10.244**** | 5.295*** |
| | *(2.393)* | (2.005) |
| Per Pupil Expenditure | -.0004* | -.0002 |
| | *(.0002)* | (.0002) |
| | R-Squared | R-Squared |
| .10 level * | .72 | .73 |
| .05 level ** | | |
| .01 level *** | Adjusted | Adjusted |
| .001 level **** | R-Squared | R-Squared |
| | .69 | .71 |

**Table 2**

| **Math Scores** | **4th** | **8th** |
|---|---|---|
| Association | .0256* | .0372* |
| | *(.0148)* | *(.0199)* |
| % of Voting Age Population Voting in General Election | .0227 | -.0026 |
| | *(.0372)* | *(.0499)* |
| Median Family Income | .00001 | -.00002 |
| | *(.00004)* | *(.00006)* |
| White Population | 9.186**** | 13.56**** |
| | *(1.067)* | *(1.433)* |
| Population Density | -.0003 | -.00003 |
| | *(.0011)* | *(.0014)* |
| Migration | 9.022*** | 4.631 |
| | *(2.891)* | *(3.88)* |
| Per Pupil Expenditure | -.0003 | -.0001 |
| | *(.0002)* | *(.0003)* |
| | R-Squared | R-Squared |
| .10 level * | .67 | .64 |
| .05 level ** | | |
| .01 level *** | Adjusted | Adjusted |
| .001 level **** | R-Squared | R-Squared |
| | .64 | .61 |

**Table 3**

| Dropouts | 7th to 12th |
|---|---|
| Association | -.0319*** |
| | *(.0105)* |
| % of Voting Age Population Voting in General Election | -.0331 |
| | *(.0265)* |
| Median Family Income | .00001 |
| | *(.00003)* |
| White Population | -1.169 |
| | *(.7589)* |
| Population Density | -.0005 |
| | *(.0008)* |
| Migration | -.9026 |
| | *(2.056)* |
| Per Pupil Expenditure | .0003** |
| | *(.0002)* |

| | R-Squared |
|---|---|
| .10 level * | .22 |
| .05 level ** | |
| .01 level *** | Adjusted |
| .001 level **** | R-Squared |
| | .16 |

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